MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures

Series XXX, Number 1
March 5, 1938

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

112263

HIPPOCAMPUS, THE SEA HORSE

The seas have many strange inhabitants, but none more strange than the sea horses, tiny to small fish, found in the warm waters of our own and other continents.

The Mediterranean Sea has long been noted for its large number of these peculiar fish, which were well known to the ancient Greeks. They watched the little fellows with flexible, horse-shaped heads and arched necks, as they rested upright in the water, tails wrapped tightly about a bit of seaweed, and named them, "Hippokampos," from their word "hippos" meaning "horse" and "kampos" meaning "sea monster" or "caterpillar."

In those days, the Greeks used parts of animals in making medicines. One kind of ointment was made of sea-horse ashes mixed with oil, tallow, or pitch. It was applied to the skin of persons afflicted with baldness, canker, or leprosy. In some cases, it was used for mad-dog bites and taken internally. It was probably a bitter dose.

For a long time, no one knew just what a sea horse really was. In an encyclopedia published about A.D. 1500 it was listed as "Zidrach," a sea dragon. It certainly did not look like any of the fish known at that time. The gills were in numerous, small, rounded tuffs instead of flat plates, and in place of scales it wore an outer covering similar to that of insects. This outside skeleton was made of fifty or more hard, jointed plates of armor connected with each other and extending from the neck to the lower end of the body. Along the back were tiny shields arranged like tiles on a roof, forming a crest on the head, neck and back. These shields had either erect spines or fleshy, simple or branched filaments that waved back and forth. All these unusual features, and the fact that the tail was prehensile like a monkey's and was not used in swimming, seemed to place the sea horse outside the fish family. But what could it be? Many years passed before its true history was known.

Today, these little fishes are no longer objects of mystery. Some of them live in large aquaria filled with circulating sea water containing living worms, shrimps, and other sea life. They soon learn to know

their attendants and often wrap their tails about the finger of a person with a grip as strong as that of a small child.

There are about fifty different kinds of sea horses. Several species are found along the Atlantic coast from Cape Cod to the Gulf. One kind is common close to the city of New York. Its length is usually four inches, but a seven and a half-inch one has been captured. Florida boys and girls sometimes find the dwarf sea horse, which is never more than two inches long. The largest member of this family of fishes to be found near us is the foot-long sea horse of the Pacific coast, known as "Hippocampus ingens." Japan and Australia also have large sea horses.

These "Neptune's Knights," as they have been called because they look like the knights in a chess game, live near shore in eelgrass or other marine plants. Usually they are colored like their surroundings, making it extremely difficult to find them. Sea horses that live among the corals and sponges are often marked with green, red, and silver spots.

Few sights are more fascinating than a swimming sea horse. With head and body erect, tail coiled, pectoral fins (back of the gills) moving constantly to hold the balance, and the dorsal fin (on the back) waving rapidly from side to side, it makes its way through the water. First one bright eye rolls about in search of food, then the other, for the eyes work independently. Opening and closing the tiny mouth at the end of the long snout with a quick movement, the fish snaps at any prey in its path and swallows it without chewing. Then with a smacking sound the sea horse goes on to hunt for more. Should it desire to go downward, the neck is curved and the tail rolled in; for rising, it straightens itself out.

Strangest of all, the male sea horse, as well as its cousin the male pipefish, has a pouch on the underside of the body. Into this soft, spongy pocket, or incubator, the mother sea horse pushes from 150 to 200 eggs. Soon the eggs hatch within the soft enclosure, and several weeks later the youngsters are hurled out of the father's pouch to hunt their own homes and food.

MARGARET M. CORNELL, Guide-lecturer

NOTE: In Hall 18 may be seen one of the giant sea horses from the Pacific coast of our country.

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CLIFFORD C. GREGG, Director

MUSEUM STORIES FOR CHILDREN

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FIELD MUSEUM
NATURAL HISTORY

Series XXX, Number 2
March 12, 1938

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

Everybody knows and loves a Christmas tree, and you will agree that without a tree no Christmas celebration is complete. As far back as two thousand years ago, people in northern countries decorated trees with bright ornaments and lighted candles. Their feast, held the last of December, celebrated the beginning of longer days. Children would dance in circles about the decorated tree, believing that the imp who lived in the tree and who was imprisoned in their dancing circle would grant any gift they desired, in return for his freedom. Because they were so straight and tall and because they were the only trees that could hold leaves in spite of the cold and snow, people chose to decorate evergreen trees. When the early Christians came to these countries, they adopted the custom of decorating evergreen trees, but they did so in honor of the Christ child.

Here in the United States usually spruce, balsam, and fir are used for Christmas trees. Some of the other American members of the evergreen family that are sometimes used are the pine, juniper, and arborvitae.

An evergreen tree does lose its leaves, but not all at one time. In the course of one year, from two or four to as many as eight to fourteen leaves are gradually shed, and new ones appear each season; however, since the tree does not shed all its leaves at any one time, it is always green.

Pines are easy to distinguish because their "needles" or leaves occur in clusters. Around Chicago we have two native pines: the tall white pine bears its needles in bundles of five, and the short, scrubby jack pine has two stubby needles in each cluster. The piñon pine, which grows in the southwestern part of the United States, has small, knobby pine cones that, when they burst open, drop sweet pine nuts. The Indians, squirrels, jays, and chipmunks gather the nuts and feast on the kernels. The squirrels and mice hide them away for winter use, while the Indians gather bushel after bushel of nuts, saving some for food and sending the rest to market.

Children use the red cedar, or (as it is more commonly known) the juniper tree, for from it are made most of our pencils. The countries of

France and England import juniper from the United States for their pencils. Usually evergreens have cones, but the junipers and yews have blue, berry-like fruit which is eaten by birds and mice.

Most evergreens have a gummy liquid called resin in their wood. The sweet smell of pine and cedarwood is due to the resin. Insects do not like resin, so people make bags and cedar chests of juniper wood for storing clothing, and bundles of fragrant cedar chips are placed in closets to discourage moths from setting up housekeeping in Mother's fur coat.

The ancient Egyptians believed that they were going to need their bodies and belongings in the afterworld. They constructed their coffins and funeral boats of cedarwood because they knew resinous woods are usually more durable than those without resin.

The arborvitae, or tree of life, is an evergreen commonly planted about houses. The Indians called the tree "feather-fan" and, as the wood was tough and readily split into thin sheets, they used arborvitae wood for canoe frames. Today the wood is used for roof shingles.

Evergreens grow in cold, dry climates where most broad-leafed trees cannot live. High on the mountain side where the cold becomes intense, evergreen trees are found clinging on the rock walls where there seems to be no roothold. Those trees that grow farthest up the mountain are often twisted and stunted by the fierce winds. The branches on the windward side are broken and the bark wounded, causing the trees to grow in unusual shapes.

Across the northern and southeastern areas of our country there once stretched forests of tall, straight evergreens. Many of the trees in these forests were cut for their valuable timber, and often destructive forest fires broke out and destroyed the trees that were still standing. More important than the lumber is the fact that forests hold moisture from rain and snow. The deep, rich soil of the forest holds water and allows it to run off gradually, thus irrigating farmland throughout the summer when water is most needed.

MARIE B. PABST, Guide-lecturer

NOTE: In Hall 26 there are pictures and samples of the wood of many of our American evergreens. In Hall J there is an Egyptian boat, also coffins made of cedarwood.

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CLIFFORD C. GREGG, Director

MUSEUM STORIES FOR CHILDREN

FIELD MU... NATURAL HISTO...

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

Series XXX, Number 3
March 19, 1938

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

Bats are almost always thought of in connection with witches, goblins, evil spirits and bad luck. There are even silly stories about bats flying into people's hair, though there is no record that this ever happened. How do you suppose the bats came to have such a bad reputation? Perhaps it is because most bats sleep during the day and fly only after dusk when it is very difficult for us to observe them. Perhaps it is because they are the only mammals that really fly, and for years many people believed bats to be a strange kind of bird. It is also true that vampire bats have the very unusual habit of living on a diet of blood, and they have helped to give all bats a bad reputation. At any rate, the bat has been a very misunderstood mammal for a long time.

Bats are found all over the world except in very cold countries. Some of them are almost as small as hummingbirds, while others have a wingspread of more than five feet. Their fur may be red, yellow, white, silver or a shade of brown. They live on many kinds of food. Some African, Australian and Philippine bats, among which are the largest of all bats, are known as fruit-eaters, because they live on the wild and cultivated fruits of those countries. The fish-eating bats of Trinidad are said to scoop up the fish in the membrane of skin between their legs, although no one knows exactly how this fishing is done. Birds, mice and rats fall prey to certain meat-eating bats of India, China and South America.

The vampire bats live only in Mexico and Central and South America. Blood is their sole food, since their teeth and digestive systems are not fitted for any other food. A vampire bat will gouge out a little of the skin of an animal with its sharp front teeth and lap the blood as it flows from the wound. Occasionally one will bite a sleeping man, usually on the big toe sticking out from under the blankets, and the attack is so gentle that it does not awaken the victim. The danger of the vampire's bite lies in repeated attacks and in infection.

All the bats of the United States are insectivorous (insect-eating), medium to small in size, and harmless. Their teeth are too small and

weak to injure anyone seriously. Many insects upon which they feed are harmful to man in one way or another.

The bats are very interesting because they fly with marvelous control. No insect-eating bat ever deliberately landed in anyone's hair, and he is far too skilful a flier to happen there accidentally. He can nose-dive, bank, and "stop on a dime" while "flying blind" in the darkness of the night or in a gloomy cave. "Blind as a bat," however, is a rather meaningless expression since bats are not blind, though it is true that they do not see well in the bright sunlight. The eyes of insectivorous bats are well-developed though so small that the bats cannot possibly see the tiny insects upon which they feed. Scientists have experimented with the bat's control in flight. They tell us that the key to the mystery seems to lie in the animal's highly developed sense of touch. The bat is apparently very sensitive to air pressure and sound waves. Perhaps it can feel and hear insects it cannot see.

Bats often rest by hanging upside down from seemingly smooth surfaces. They are able to do this because of the sharply curved claws on their feet. Most bats also have small claws on their thumbs, and the fruit-eaters have two claws on each wing, one on the thumb, the other on the first finger.

Scientists who have experimented with bats say that they are queer animals. Sometimes they are wide awake and active for a while, and then suddenly become sullen and temperamental. They will retire to some corner, hang themselves up by their feet and refuse to budge for hours. Some of them are said to have very bad dispositions, but perhaps that is due, at least in part, to the fact that they are often rudely awakened from a sound sleep.

It is unfortunate that our small, harmless and really beneficial bats have been misunderstood only because of their unusual habits and appearance and the bad reputation given them by a few South American cousins, the vampires, who turned out to be the "black sheep" of the family.

VELMA D. WHIPPLE, Guide-lecturer

NOTE: Some Chicago bats are shown in the mammal case at the east end of Hall 17.

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CLIFFORD C. GREGG, Director

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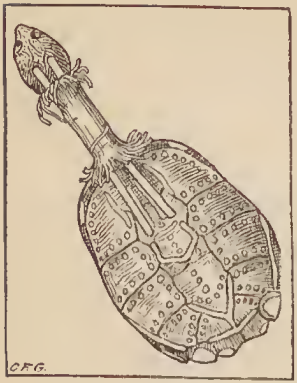
FIELD MUSEUM OF NATURAL HISTORY

Series XXX, Number 4
March 26, 1938

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Field Drive
CHICAGO

NORTH AMERICAN INDIAN MUSICAL INSTRUMENTS



The North American Indians have accompanied almost every phase of their lives with music. From the time the babe comes into the world and is soothed with Indian lullabies, its life is surrounded with music. Through its childhood it is trained for the daily tasks, each with a song; it is taught the tribal history in songs, and, finally, the more complicated ceremonies and dances with their music. No matter how simple the task or how common the object, there is a tune and a thought to go with it. There are songs for grinding corn, for bringing water from the spring, for the flaming fire, for food and hunting, and for the wind in the trees and stars in the sky.

The Indians love their music—it expresses their thoughts and feelings as it does for many primitive as well as civilized people. The meaning and song are the important parts; the instruments are to assist and give the rhythm. It is only on rare occasions that the instruments carry the melody.

Probably the most important and widely spread Indian musical instrument is the drum. It is used especially for ceremonies where rhythm is necessary. The drum need not have a loud tone but it usually has carrying qualities and can be heard for long distances. Very frequently the rhythm of the drum beat will be faster than that of the voices and only at intervals will the voices and the drum be together. The drums can be made for different pitches which vary according to the weather. If the skin drumhead is moist, the drum sound will be a dull thud; if the drumhead is dry the sound will have a clear tone. For this reason the drummer often dries or warms his drum over a fire before he plays on it. Some drums are small and easily carried by the dancers, while others are so large that they are hung on wooden supports. Often the drums are beautifully decorated with painted designs, with ornaments made from porcupine quills, or with beads and feathers.

The drums are supplemented by rattles of various kinds. Once again the musical instrument has no real tune—it simply furnishes the

rhythm. Occasionally rattles of several tones are used together for harmony. Many of these rattles are made of hollowed out gourds with seeds or pebbles inside to produce the sound effects; others are made of wood, rawhide or mussel shells. The Iroquois Indians make unusual rattles of snapping-turtle shells.

While the rhythm so characteristic of Indian music is usually produced by drums and rattles, the Indians in the southwest produce the same swing by working a bone or wooden scraper back and forth across a notched stick.

To a listener unfamiliar with Indian music this rhythmical noise from drums, rattles and notched sticks drowns most of the real music, the sweet melody underneath the din. Only after hearing it several times does the person begin to feel the beauty of Indian music. The melody is carried by the Indian voices and is sometimes assisted by flutes, flageolets and whistles. These instruments can produce different notes and thus help the melody.

Probably the most ancient musical instrument was the bone flute or whistle made from an animal bone. This whistle was usually carried around the neck of an Indian hunter. In later years, the whistles were used in dances and ceremonies to imitate or symbolize the cries of birds, animals and spirits.

Since the flute and the flageolet can produce melodies, they are occasionally played without vocal accompaniment. These instruments have rather plaintive sounds and are used especially when sentiment is to be expressed. The Indian boy uses the flute or flageolet for courting. With a melody and song, probably of his own composition, he tells of his love for the Indian maiden.

In recent years, Indians have enjoyed singing together in fairly large groups. These songs are still accompanied by drums, rattles, whistles, flutes, notched sticks and flageolets as well as body movements. But through all this confusion there is woven a simple melody which sings out their own simple life.

MIRIAM WOOD, Guide-lecturer

NOTE: In Halls 4, 5, 6, 7 and 10 (North American Indians) you may see different kinds of drums, rattles, whistles, pipes, flutes, flageolets and notched sticks.

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CLIFFORD C. GREGG, Director

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Field Museum of Natural History

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April 2, 1938

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Field Drive
CHICAGO

SOME NATIVE AMERICAN NUTS

Which nuts do you like best? It would seem that people like pecans very much for more of them are sold in the markets than any other American nut. They are very desirable because they have thin shells and large kernels. The American Indians had learned to use pecans and other nuts for food long before the white man found this land. The Indians taught the colonists how to make a delicious food out of hickory nuts. They pounded the hickory nuts in water, skimmed off the floating shells and allowed the remaining mass to set until a rich creamy substance rose to the top as cream rises to the top of milk. That "cream" was called "pawhiccora" and the colonists shortened the term to "hickory," and called the shaggy-barked tree which bore the nuts by that name. Both the shag-bark and the shell-bark hickories are found in the eastern part of the United States and in the Mississippi Valley.

The native black walnut is a richly flavored nut that grows from New England to Florida in the east, and from Minnesota to Texas in the west. The tree is valued more for its wood than for its nuts, although they are desirable. However, it takes a persevering boy or a hungry squirrel to get the kernels from the thick, hard, rough shells. The butternuts or white walnuts are even more delicious, but so rare they are seldom found. In earlier days, the colonial women used the green hulls of the butternuts to make a dye for their homespun cloth.

Hazel nuts or filberts grow on small, bush-like trees in the northeastern and north-central parts of the United States. The large, colored scar around the base of the globe-shaped nut shows where the nut was attached to its outside covering. Within the shell is a single, dry, firm kernel of sweet and agreeable flavor.

The nuts of the horse chestnut, which is a European tree planted for ornament, are not good to eat, but those of the "Chinquapin" are eaten. That American chestnut has been the reason for many a "nutting party." In the Appalachian region where the chestnut is native, the trees grow to huge size. They bear their nuts in silken-lined burrs that have such long stickers it is impossible to get the nut

until after the frost has caused the burr to pop open. Unfortunately, the tree is so easily killed by a disease called "Chestnut Blight" that it is fast disappearing. Most of the edible chestnuts bought in the markets come from southern Europe.

The piñon pines of the far southwest bear nuts that are so well liked by the Indians and Mexicans of the region that they are an important part of the food supply and very few get into northern markets. The women beat the cones from the trees and heat them over a fire until the nuts fall out. Usually they eat them just as they are, but sometimes they grind the nuts into flour out of which they make bread. The Araucaria pines of Chile and southern Brazil bear similar nuts, but they are much larger. They are used as food there and can be bought in the markets when in season.

The kidney-shaped cashews are usually imported from India but are really native to South America, where they are very common. The natives eat only the fleshy fruit and throw away the nut as you would throw away the core of an apple. The nut grows on the end of the fruit and the outer coat of its shell has a dark brownish fluid that has the same poisonous qualities as poison ivy. It causes blisters on the skin. After heating the poison disappears and the shell can be easily removed. The cashew nut is then ready for use as food.

The most popular nuts from South America are the Brazil or cream nuts that grow on tall forest trees in the river lands of the Amazon region. A dozen to twenty nuts grow in a round, hard-shelled case as large as a grapefruit. This falls to the ground when ripe. Both men and monkeys hunt for Brazil nuts and the natives sell great quantities to American and English companies who ship them to northern markets.

Certain introduced nuts, like the almond and English walnut, have become so important to us that they seem almost native. Coconuts and peanuts are also very familiar but neither is a true nut.

When next you eat nuts will you be any better able than the squirrel to name the nuts you have?

LEOTA G. THOMAS, Guide-lecturer

NOTE: You can become familiar with the appearance of some of the nuts named in this story by visiting Halls 25 and 29.

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FIELD MUSEUM OF NATURAL HISTORY

Series XXX, Number 6
April 9, 1938

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Field Drive
CHICAGO

THE EGYPTIAN PYRAMIDS

Long ago the ancient Egyptians buried their dead in pits in the sand. Since the sand was dry the bodies did not decay. The Egyptians, finding these preserved bodies, somehow got the idea that when they died they were simply moving into the Kingdom of the Dead, where they would need their bodies and all their belongings. The rich, because they owned more, had to have larger pits, which were lined with unbaked brick. Eventually brick tombs were built with storerooms above ground. Large tombs admitted air and bacteria, which would have caused the bodies to decay had they not been mummified, or preserved artificially. The kings were so rich that their tombs were often very large and a great tomb became a symbol of a powerful king. Such a tomb was often built during the king's lifetime, and was frequently the chief accomplishment of his reign.

King Zoser built the earliest known stone tomb. This was the first large stone structure known in history. Since it roughly resembles a pyramid, and its sides are a series of enormous steps, it is called a "step pyramid."

The most famous pyramids are those of Gizeh, built along the west shore of the Nile. The largest of this group is the Great Pyramid of King Khufu, followed in size by those of Khafre and Menkure, which are smaller and not so well built. Perhaps this is because these kings were not as powerful as Khufu, or, more likely, that the resources of the land had been exhausted in the building of the Great Pyramid.

The Great Pyramid covers thirteen acres, or about the same amount of land included within the four streets surrounding Field Museum. Originally it was about 480 feet high, which is taller than Tribune Tower. It was constructed of yellow limestone blocks, and the final step in its construction was the laying of a facing of fine white limestone.

In the Middle Ages this outside covering of the Great Pyramid was removed by the Arabs and used in the building of mosques and walls of the fortress of Cairo. Thus the Great Pyramid was robbed of much of its beauty.

The limestone blocks covering the Great Pyramid were so closely fitted that a knife-blade could not be inserted between two of them. Only in optical work, today, do we find such accuracy, and in the Great Pyramid it was on a scale of acres rather than inches. This accuracy on such an enormous scale seems more remarkable when we realize that the actual building was carried on by unskilled laborers. These laborers must have been closely supervised by skilled workmen.

Most of the work was undoubtedly carried on during the months when the Nile was flooded. Some of the quarries from which the building stones were secured were situated directly on the river. In these quarries the blocks were loaded on barges and floated across the river. Other quarries, however, were located some distance from the Nile, and canals were dug connecting them with the river.

The blocks were probably shaped with bronze saws set with sapphires, though some stones might have been cut with softer tools of bone or copper by sprinkling quartz sand into the cut and drawing the tool back and forth over the sand.

The lowest layer of blocks in the Great Pyramid must have been dragged into place by brute strength; the upper layers were hauled over a sloping ramp of mud and brick, built against the pyramid. When the construction was completed the ramp was removed. Historians have said that it took ten years to build the ramp.

Khufu and Khafre have been pictured by some writers as terrible tyrants, driving thousands to labor unwillingly for them. Their great pyramids, however, seem to point to many years of peace and contentment, during which time the people were possessed with one great purpose—servitude of their divine monarchs.

The Pyramid Builders were perhaps the first people of historic times who worked together successfully. A workman laboring alone could not have budged a single stone of the famous pyramids, but thousands, united under wise leadership, erected monuments which hold the wonder and admiration of our modern world.

VELMA D. WHIPPLE, Guide-lecturer

NOTE: There are pictures of Zoser's "step pyramid" and the Great Pyramid in Hall J.

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MUSEUM STORIES FOR CHILDREN

Field Museum of Natural

Presented by

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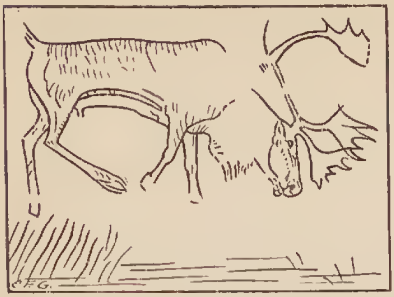
FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Field Drive
CHICAGO



It is hard for us to think of a time when there were no beautiful pictures, no graceful figures cut from stone or marble and no jars fashioned from the clays of the earth. These are a very important part of our art today, yet the Chellean and Neanderthal peoples had none of them as far as any one has been able to discover. The entire time of those early men seems to have been spent in procuring food and shelter and protecting the family from enemies of all kinds.

Not until the time of the Aurignacians of about 35,000 years ago do we become acquainted with art of any kind. These Cro-Magnons, as they were called, seem to have been a superior kind of men with fingers better trained to make and use bone, flint and obsidian tools. They dressed and shaped animal skins for clothing, made bone handles for flint blades, and collected teeth, shells, mammoth ivory and stones which they pierced with long, pointed bone awls for necklaces.

They drove fierce animals from the choicest caves and used the dangerous winding passageways and still, dark caverns as rooms in which to record their art. Evidently, they did not wish all people to see what they did for sometimes the drawings are far, far from the entrances of the caves. Often, they can be seen only by crawling on hands and knees through tiny openings, or by lying on the back and looking up at the ceiling. A very famous colored ceiling painting of some bisons was discovered in just such a place by a child who had accompanied her father into a cave.

Whether the art of the Aurignacians was part of their religion and could be seen only by those connected with that religion, whether it had something to do with magic and the securing of animals in the hunt, or was just for the beauty of outline and color, one cannot say.

The Cro-Magnons really had two kinds of art. First came the carvings and engravings; then the paintings. At first the engravings were just wavy lines on clay surfaces, but later the artists learned how to cut deep lines in the hard stone walls with a flint tool called a "burin." The first paintings seem to have been simple outlines of hands pressed against a wall and outlined with color. Such hands frequently show

whole or parts of fingers missing, but never the thumbs. Occasionally, if one looks closely at the early animal pictures, it is possible to trace the finger marks that outlined the shape, or to see the deep cuts made by the engraving tool. Among the animals shown in the pictures made by these earliest of artists are the mammoth, bison, horse, wild cattle, stag and woolly rhinoceros—all animals of the dry, cold tundra climate of the period in which the early Aurignacians lived. Often the drawings are just profiles (side views) with heads too small for the large stocky bodies, with just two legs and the horns shown as seen from the front. But as time passed and the men became more accustomed to their tools and to observing the animals more accurately, we find the pictures become as natural as if made by people of today. Fish, birds, and even plants are shown singly or in groups. And the reindeer becomes the most important animal, and is worked out in marvelous detail.

People seeing the cave pictures for the first time are always amazed at the colors used. In a few locations the paintings have been so well preserved that the colors are still bright; in other caves, they are dim and hard to see.

The colors used were black, red and yellow. Charcoal or the mineral called manganese supplied the black; the red and yellow were made from iron rust or ochre. Often, the artist used the color in pieces as we do sticks of colored chalk; again, the colors were ground to a powder and mixed with water, marrow or grease. They were then spread on with fingers or some kind of brush. Several of the bone paint tubes with colors still clinging to the inside have been found as well as some of the stone saucers in which the colors were crushed with pestles.

Not only did the Aurignacians carve on the walls, but they were sculptors. From bone, ivory and stone they shaped human beings. Looking at their statuettes of women, we are interested to see how much they are like the Bushman and Hottentot women of Africa today. Most of their statues are of women, few of men.

Thus did those early cave people lay the beginning of carving, engraving and painting, and how they did it will always remain one of the wonders of their story.

MARGARET M. CORNELL, Guide-lecturer

NOTE: In Hall C on the ground floor may be seen a diorama showing an Aurignacian man making a picture of his hand and other art objects.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

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CLIFFORD C. GREGG, Director

MUSEUM STORIES FOR CHILDREN

Field Museum of Natural History

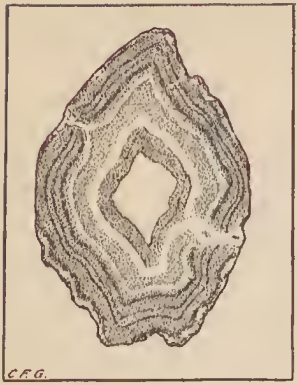
Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

Series XXX, Number 8
April 23, 1938

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Field Drive
CHICAGO

AGATES



Children probably think of agates as bright banded marbles. Years ago large marbles were made of agate so those marbles were rightly named. The boys of today seldom see true agates for most of their "aggies" are glass imitations.

Agate is the Cinderella of the quartz family. When first found the stone is not attractive for it is dark gray or brown in color. However, after it is cut, beautiful bands and patterns appear. Sometimes, in the variety known as "moss agate" there are designs that look like trees, clouds, and landscapes.

Agate is thought to be formed in cavities in the rocks and laid down one band at a time by water carrying the mineral in tiny invisible particles. There may be hundreds, even thousands of these bands all varying in width and color. Agates with straight bands can be used for cameo cutting. As the agates grow from the outside inward, the growth may stop at any time and a hole be left in the center of the stone. Sometimes the center is lined with sparkling quartz or amethyst crystals.

All the finest agates are dyed. In any other gem stone it would be considered a fraud to add color, but agate is an exception. Because the different bands can absorb different amounts of dye, various ribbons of color can be obtained. A common method is to soak the agate in honey for a number of weeks until the stone has absorbed as much honey as possible. Then the stone is either baked or it is immersed in hot sulphuric acid which cooks the honey. The bands that have absorbed a great deal of honey will be cooked to a deep caramel color. The denser bands that could not soak in as much honey will cook less thoroughly and will turn yellow or red. It is the same color change that takes place in cooking candy.

Fine agates have been mined and dyed in India since ancient times. From India they were exported to Egypt and carried by desert caravans to central Africa. Until recently the finest agates came from a small district in the Black Forest region of Germany. The largest town in the district is Oberstein. The industry grew up centuries ago because

of the abundance of stones found along the Nahr River, which flows through Oberstein. As early as 1497 the town was famous for its agate cutting, and merchants from Venice and Genoa brought the stones purchased in far eastern India to Oberstein to be cut and polished. Today, although few agates are found at Oberstein, the city is still the world center for the cutting and polishing of agates. Most of the stones cut there now come from Brazil and Uruguay. After being cut the stones are shipped to the countries using the agate.

Nearly everyone living in Oberstein works at stone cutting. Whole families are employed in their own homes and for generations the art of agate cutting has been handed down from father to son.

First the stones are broken with a hammer and chisel into a desirable shape. Then they are ground on a large sandstone wheel. The workmen lie flat on a low bench, prop their feet against a brace on the floor and with the pressure of their whole body force the agate against a grindstone. These grindstones are often five feet in diameter and they are run by waterpower from the Nahr River. While being polished, the agates emit a bright phosphorescent light. The tiny kitchens with the prostrate men working in the weird flickering light certainly must seem like a scene from one of the fairy tales for which the Black Forest is famous.

The agates from Uruguay so surpass in size and beauty those from other localities that at the present time they form almost the only source of supply. Although agates are found in the United States, particularly Montana and the Lake Superior region, it is cheaper to import the German cut stones than to cut and polish the American stones.

Because agate is so tough and fibrous it is used in places where much wear and precision are demanded. Knife edges on balances and scales, the jewels in machinery, and dentists' tools are made of agate. It is also used for ornament in jewelry, knife handles, and weights.

MARIE B. PABST, Guide-lecturer

NOTE: Natural and dyed agates may be seen in Hall 34 and in the Gem Room are shown several interesting cut agates.

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FIELD MUSEUM OF NATURAL HISTORY
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CHICAGO

THE BITTERNS

The bitterns belong to the same family as the herons, but differ in having shorter necks and legs, greater length of toes, and backs covered with long feathers. They are found everywhere except in extremely cold lands.

North America has one strange member of the group, known as the American bittern. This is the time of the year when the American bittern usually attracts most attention, and bird lovers travel far to visit some reedy marsh or muddy river bank blanketed with cat-tails in hopes of hearing his booming "Pump-er-lunk!" Fortunate indeed are those who both hear and see the owner of that penetrating call of the swamps.

It is a shy, solemn bird and for some reason prefers to live a solitary life. Unlike its cousins the great blue heron or the lovely white heron of the far south, it has no brilliant plumage, no showy egrets or majestic height to show the world. Dressed in gray-brown with stripped markings it blends into its surroundings. Even its eggs are colored like the plant stems and leaves with which the flat moundlike nest is made. When alarmed or surprised it suddenly points the long, spearlike bill straight up into the air, draws back the head and contracts the body until it has the appearance of some old stake, or crouching low slowly backs away and "melts" into the growing plants.

Like the least bittern, a much smaller cousin, the American bittern is much more often heard than seen. And the famous calls are especially noticeable during the nesting season. Many a superstitious person has had reason to shudder when the air is filled with the booming call note, for it is a weird call and stands out above all the other evening sounds of the marshes. Because of the various syllables and the fact that some are stronger than others, people in different parts of the country have different names for the American bittern. To some, it is the "bog bull" and its call is likened to that of a bull; in another area it may be called a "poke," a "lookup," or an "Indian pullet." The latter is especially heard on Long Island where the American bittern used to be the favorite bird of the Indians. The best known name is the "stake driver." All the strange sounds are made by the taking in of gulps of air which collect in the throat and are increased or

decreased with the aid of a kind of bellows made by a peculiar arrangement of the skin and muscles. For a long time no one knew how the sounds were made and many odd stories were invented to explain the calls.

South America and Mexico also have some very interesting bitterns. The tiger bitterns are especially handsome birds. They are larger and much more vividly colored than their cousins to the north. Some of these South American bitterns are marbled and have large patches of solid color about the heads and shoulders. The tiger bitterns live among the reeds and grasses of the river shores. At dawn and early evening they send forth a call very similar to that of the jaguar, hence the name, "tiger bittern." The Spanish people of South America have always called the jaguar a "tigre."

The so-called "sun bittern" of South America is not a bittern at all, but belongs to the group of rails. It has the habit of strutting like a peacock to show off the bright colors hidden beneath its somber coat.

The bitterns of the eastern hemisphere vary greatly in color and size. In India is found the trim, dainty, chestnut-colored Javan bittern about the same size as the least bittern of our own marshes. The European bittern has almost disappeared from certain sections of the continent. In olden times, the flesh was considered a great delicacy and the birds were listed as game birds.

During the Middle Ages, when hawks known as falcons, were trained for hunting, the bitterns of England were preserved solely for hunters. They not only provided meat but sport, as they are vicious fighters. It is always best to keep away from a wounded bittern. It attacks with both bill and claws. Fluffing the feathers on head and neck, it extends the wings and flies straight toward the eyes of its enemy, so dog and man must beware.

Due to the protective devices of the bitterns and the fact that they keep to themselves, we should have these interesting birds in our swamps long after other related kinds have been forced to leave.

MARGARET M. CORNELL, Guide-lecturer

NOTE: In Hall 20 may be seen a least bittern standing over its nest among the reeds, while in Hall 21 are shown the American bittern and its cousins, as well as some of the bitterns of the eastern hemisphere.

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